



SEQUENCE LISTING

<110> Rosanne M. Crooke
Mark J. Graham

<120> MODULATION OF APOLIPOPROTEIN(A) EXPRESSION

<130> ISPH.0595US.P1

<150> 09/923,515

<151> 2001-08-07

<150> 60/475,402

<151> 2003-06-02

<160> 76

<210> 1

<211> 20

<212> DNA

<213> Artificial Sequence

<220>

<223> Antisense Oligonucleotide

<400> 1

tccgtcatcg ctcctcaggg

20

<210> 2

<211> 20

<212> DNA

<213> Artificial Sequence

<220>

<223> Antisense Oligonucleotide

<400> 2

gtgcgcgcga gcccgaaatc

20

<210> 3

<211> 20

<212> DNA

<213> Artificial Sequence

<220>

<223> Antisense Oligonucleotide

<400> 3

atgcattctg cccccaagga

20

<210> 4

<211> 13938

<212> DNA

<213> H. sapiens

<220>

<221> CDS

<222> (46)...(13692)

<400> 4

ctgggattgg gacacacttt ctggacactg ctggccagtc ccaaa atg gaa cat aag	57
Met Glu His Lys	
1	
gaa gtg gtt ctt cta ctt ctt tta ttt ctg aaa tca gca gca cct gag	105
Glu Val Val Leu Leu Leu Leu Leu Phe Leu Lys Ser Ala Ala Pro Glu	
5 10 15 20	
caa agc cat gtg gtc cag gat tgc tac cat ggt gat gga cag agt tat	153
Gln Ser His Val Val Gln Asp Cys Tyr His Gly Asp Gly Gln Ser Tyr	
25 30 35	
cga ggc acg tac tcc acc act gtc aca gga agg acc tgc caa gct tgg	201
Arg Gly Thr Tyr Ser Thr Thr Val Thr Gly Arg Thr Cys Gln Ala Trp	
40 45 50	
tca tct atg aca cca cat caa cat aat agg acc aca gaa aac tac cca	249
Ser Ser Met Thr Pro His Gln His Asn Arg Thr Thr Glu Asn Tyr Pro	
55 60 65	
aat gct ggc ttg atc atg aac tac tgc agg aat cca gat gct gtg gca	297
Asn Ala Gly Leu Ile Met Asn Tyr Cys Arg Asn Pro Asp Ala Val Ala	
70 75 80	
gct cct tat tgt tat acg agg gat ccc ggt gtc agg tgg gag tac tgc	345
Ala Pro Tyr Cys Tyr Thr Arg Asp Pro Gly Val Arg Trp Glu Tyr Cys	
85 90 95 100	
aac ctg acg caa tgc tca gac gca gaa ggg act gcc gtc gcg cct ccg	393
Asn Leu Thr Gln Cys Ser Asp Ala Glu Gly Thr Ala Val Ala Pro Pro	
105 110 115	
act gtt acc ccg gtt cca agc cta gag gct cct tcc gaa caa gca ccg	441
Thr Val Thr Pro Val Pro Ser Leu Glu Ala Pro Ser Glu Gln Ala Pro	
120 125 130	
act gag caa agg cct ggg gtg cag gag tgc tac cat ggt aat gga cag	489
Thr Glu Gln Arg Pro Gly Val Gln Glu Cys Tyr His Gly Asn Gly Gln	
135 140 145	
agt tat cga ggc aca tac tcc acc act gtc aca gga aga acc tgc caa	537
Ser Tyr Arg Gly Thr Tyr Ser Thr Thr Val Thr Gly Arg Thr Cys Gln	
150 155 160	
gct tgg tca tct atg aca cca cac tcg cat agt cgg acc cca gaa tac	585
Ala Trp Ser Ser Met Thr Pro His Ser His Ser Arg Thr Pro Glu Tyr	
165 170 175 180	
tac cca aat gct ggc ttg atc atg aac tac tgc agg aat cca gat gct	633
Tyr Pro Asn Ala Gly Leu Ile Met Asn Tyr Cys Arg Asn Pro Asp Ala	
185 190 195	
gtg gca gct cct tat tgt tat acg agg gat ccc ggt gtc agg tgg gag	681
Val Ala Ala Pro Tyr Cys Tyr Thr Arg Asp Pro Gly Val Arg Trp Glu	
200 205 210	

tac tgc aac ctg acg caa tgc tca gac gca gaa ggg act gcc gtc gcg	729
Tyr Cys Asn Leu Thr Gln Cys Ser Asp Ala Glu Gly Thr Ala Val Ala	
215 220 225	
cct ccg act gtt acc ccg gtt cca agc cta gag gct cct tcc gaa caa	777
Pro Pro Thr Val Thr Pro Val Pro Ser Leu Glu Ala Pro Ser Glu Gln	
230 235 240	
gca ccg act gag caa agg cct ggg gtg cag gag tgc tac cat ggt aat	825
Ala Pro Thr Glu Gln Arg Pro Gly Val Gln Glu Cys Tyr His Gly Asn	
245 250 255 260	
gga cag agt tat cga ggc aca tac tcc acc act gtc aca gga aga acc	873
Gly Gln Ser Tyr Arg Gly Thr Tyr Ser Thr Thr Val Thr Gly Arg Thr	
265 270 275	
tgc caa gct tgg tca tct atg aca cca cac tcg cat agt cgg acc cca	921
Cys Gln Ala Trp Ser Ser Met Thr Pro His Ser His Ser Arg Thr Pro	
280 285 290	
gaa tac tac cca aat gct ggc ttg atc atg aac tac tgc agg aat cca	969
Glu Tyr Tyr Pro Asn Ala Gly Leu Ile Met Asn Tyr Cys Arg Asn Pro	
295 300 305	
gat gct gtg gca gct cct tat tgt tat acg agg gat ccc ggt gtc agg	1017
Asp Ala Val Ala Ala Pro Tyr Cys Tyr Thr Arg Asp Pro Gly Val Arg	
310 315 320	
tgg gag tac tgc aac ctg acg caa tgc tca gac gca gaa ggg act gcc	1065
Trp Glu Tyr Cys Asn Leu Thr Gln Cys Ser Asp Ala Glu Gly Thr Ala	
325 330 335 340	
gtc gcg cct ccg act gtt acc ccg gtt cca agc cta gag gct cct tcc	1113
Val Ala Pro Pro Thr Val Thr Pro Val Pro Ser Leu Glu Ala Pro Ser	
345 350 355	
gaa caa gca ccg act gag caa agg cct ggg gtg cag gag tgc tac cat	1161
Glu Gln Ala Pro Thr Glu Gln Arg Pro Gly Val Gln Glu Cys Tyr His	
360 365 370	
ggt aat gga cag agt tat cga ggc aca tac tcc acc act gtc aca gga	1209
Gly Asn Gly Gln Ser Tyr Arg Gly Thr Tyr Ser Thr Thr Val Thr Gly	
375 380 385	
aga acc tgc caa gct tgg tca tct atg aca cca cac tcg cat agt cgg	1257
Arg Thr Cys Gln Ala Trp Ser Ser Met Thr Pro His Ser His Ser Arg	
390 395 400	
acc cca gaa tac tac cca aat gct ggc ttg atc atg aac tac tgc agg	1305
Thr Pro Glu Tyr Tyr Pro Asn Ala Gly Leu Ile Met Asn Tyr Cys Arg	
405 410 415 420	
aat cca gat gct gtg gca gct cct tat tgt tat acg agg gat ccc ggt	1353
Asn Pro Asp Ala Val Ala Ala Pro Tyr Cys Tyr Thr Arg Asp Pro Gly	
425 430 435	
gtc agg tgg gag tac tgc aac ctg acg caa tgc tca gac gca gaa ggg	1401
Val Arg Trp Glu Tyr Cys Asn Leu Thr Gln Cys Ser Asp Ala Glu Gly	
440 445 450	

act gcc gtc gcg cct ccg act gtt acc ccg gtt cca agc cta gag gct	1449
Thr Ala Val Ala Pro Pro Thr Val Thr Pro Val Pro Ser Leu Glu Ala	
455 460 465	
cct tcc gaa caa gca ccg act gag caa agg cct ggg gtg cag gag tgc	1497
Pro Ser Glu Gln Ala Pro Thr Glu Gln Arg Pro Gly Val Gln Glu Cys	
470 475 480	
tac cat ggt aat gga cag agt tat cga ggc aca tac tcc acc act gtc	1545
Tyr His Gly Asn Gly Gln Ser Tyr Arg Gly Thr Tyr Ser Thr Thr Val	
485 490 495 500	
aca gga aga acc tgc caa gct tgg tca tct atg aca cca cac tcg cat	1593
Thr Gly Arg Thr Cys Gln Ala Trp Ser Ser Met Thr Pro His Ser His	
505 510 515	
agt cgg acc cca gaa tac tac cca aat gct ggc ttg atc atg aac tac	1641
Ser Arg Thr Pro Glu Tyr Tyr Pro Asn Ala Gly Leu Ile Met Asn Tyr	
520 525 530	
tgc agg aat cca gat gct gtg gca gct cct tat tgt tat acg agg gat	1689
Cys Arg Asn Pro Asp Ala Val Ala Ala Pro Tyr Cys Tyr Thr Arg Asp	
535 540 545	
ccc ggt gtc agg tgg gag tac tgc aac ctg acg caa tgc tca gac gca	1737
Pro Gly Val Arg Trp Glu Tyr Cys Asn Leu Thr Gln Cys Ser Asp Ala	
550 555 560	
gaa ggg act gcc gtc gcg cct ccg act gtt acc ccg gtt cca agc cta	1785
Glu Gly Thr Ala Val Ala Pro Pro Thr Val Thr Pro Val Pro Ser Leu	
565 570 575 580	
gag gct cct tcc gaa caa gca ccg act gag caa agg cct ggg gtg cag	1833
Glu Ala Pro Ser Glu Gln Ala Pro Thr Glu Gln Arg Pro Gly Val Gln	
585 590 595	
gag tgc tac cat ggt aat gga cag agt tat cga ggc aca tac tcc acc	1881
Glu Cys Tyr His Gly Asn Gly Gln Ser Tyr Arg Gly Thr Tyr Ser Thr	
600 605 610	
act gtc aca gga aga acc tgc caa gct tgg tca tct atg aca cca cac	1929
Thr Val Thr Gly Arg Thr Cys Gln Ala Trp Ser Ser Met Thr Pro His	
615 620 625	
tcg cat agt cgg acc cca gaa tac tac cca aat gct ggc ttg atc atg	1977
Ser His Ser Arg Thr Pro Glu Tyr Tyr Pro Asn Ala Gly Leu Ile Met	
630 635 640	
aac tac tgc agg aat cca gat gct gtg gca gct cct tat tgt tat acg	2025
Asn Tyr Cys Arg Asn Pro Asp Ala Val Ala Ala Pro Tyr Cys Tyr Thr	
645 650 655 660	
agg gat ccc ggt gtc agg tgg gag tac tgc aac ctg acg caa tgc tca	2073
Arg Asp Pro Gly Val Arg Trp Glu Tyr Cys Asn Leu Thr Gln Cys Ser	
665 670 675	
gac gca gaa ggg act gcc gtc gcg cct ccg act gtt acc ccg gtt cca	2121
Asp Ala Glu Gly Thr Ala Val Ala Pro Pro Thr Val Thr Pro Val Pro	
680 685 690	

agc cta gag gct cct tcc gaa caa gca ccg act gag caa agg cct ggg Ser Leu Glu Ala Pro Ser Glu Gln Ala Pro Thr Glu Gln Arg Pro Gly 695 700 705	2169
gtg cag gag tgc tac cat ggt aat gga cag agt tat cga ggc aca tac Val Gln Glu Cys Tyr His Gly Asn Gly Gln Ser Tyr Arg Gly Thr Tyr 710 715 720	2217
tcc acc act gtc aca gga aga acc tgc caa gct tgg tca tct atg aca Ser Thr Thr Val Thr Gly Arg Thr Cys Gln Ala Trp Ser Ser Met Thr 725 730 735 740	2265
cca cac tcg cat agt cgg acc cca gaa tac tac cca aat gct ggc ttg Pro His Ser His Ser Arg Thr Pro Glu Tyr Tyr Pro Asn Ala Gly Leu 745 750 755	2313
atc atg aac tac tgc agg aat cca gat gct gtg gca gct cct tat tgt Ile Met Asn Tyr Cys Arg Asn Pro Asp Ala Val Ala Ala Pro Tyr Cys 760 765 770	2361
tat acg agg gat ccc ggt gtc agg tgg gag tac tgc aac ctg acg caa Tyr Thr Arg Asp Pro Gly Val Arg Trp Glu Tyr Cys Asn Leu Thr Gln 775 780 785	2409
tgc tca gac gca gaa ggg act gcc gtc gcg cct ccg act gtt acc ccg Cys Ser Asp Ala Glu Gly Thr Ala Val Ala Pro Pro Thr Val Thr Pro 790 795 800	2457
gtt cca agc cta gag gct cct tcc gaa caa gca ccg act gag caa agg Val Pro Ser Leu Glu Ala Pro Ser Glu Gln Ala Pro Thr Glu Gln Arg 805 810 815 820	2505
cct ggg gtg cag gag tgc tac cat ggt aat gga cag agt tat cga ggc Pro Gly Val Gln Glu Cys Tyr His Gly Asn Gly Gln Ser Tyr Arg Gly 825 830 835	2553
aca tac tcc acc act gtc aca gga aga acc tgc caa gct tgg tca tct Thr Tyr Ser Thr Thr Val Thr Gly Arg Thr Cys Gln Ala Trp Ser Ser 840 845 850	2601
atg aca cca cac tcg cat agt cgg acc cca gaa tac tac cca aat gct Met Thr Pro His Ser His Ser Arg Thr Pro Glu Tyr Tyr Pro Asn Ala 855 860 865	2649
ggc ttg atc atg aac tac tgc agg aat cca gat gct gtg gca gct cct Gly Leu Ile Met Asn Tyr Cys Arg Asn Pro Asp Ala Val Ala Ala Pro 870 875 880	2697
tat tgt tat acg agg gat ccc ggt gtc agg tgg gag tac tgc aac ctg Tyr Cys Tyr Thr Arg Asp Pro Gly Val Arg Trp Glu Tyr Cys Asn Leu 885 890 895 900	2745
acg caa tgc tca gac gca gaa ggg act gcc gtc gcg cct ccg act gtt Thr Gln Cys Ser Asp Ala Glu Gly Thr Ala Val Ala Pro Pro Thr Val 905 910 915	2793
acc ccg gtt cca agc cta gag gct cct tcc gaa caa gca ccg act gag Thr Pro Val Pro Ser Leu Glu Ala Pro Ser Glu Gln Ala Pro Thr Glu 920 925 930	2841

caa agg cct ggg gtg cag gag tgc tac cat ggt aat gga cag agt tat	2889
Gln Arg Pro Gly Val Gln Glu Cys Tyr His Gly Asn Gly Gln Ser Tyr	
935 940 945	
cga ggc aca tac tcc acc act gtc aca gga aga acc tgc caa gct tgg	2937
Arg Gly Thr Tyr Ser Thr Thr Val Thr Gly Arg Thr Cys Gln Ala Trp	
950 955 960	
tca tct atg aca cca cac tcg cat agt cgg acc cca gaa tac tac cca	2985
Ser Ser Met Thr Pro His Ser His Ser Arg Thr Pro Glu Tyr Tyr Pro	
965 970 975 980	
aat gct ggc ttg atc atg aac tac tgc agg aat cca gat gct gtg gca	3033
Asn Ala Gly Leu Ile Met Asn Tyr Cys Arg Asn Pro Asp Ala Val Ala	
985 990 995	
gct cct tat tgt tat acg agg gat ccc ggt gtc agg tgg gag tac tgc	3081
Ala Pro Tyr Cys Tyr Thr Arg Asp Pro Gly Val Arg Trp Glu Tyr Cys	
1000 1005 1010	
aac ctg acg caa tgc tca gac gca gaa ggg act gcc gtc gcg cct ccg	3129
Asn Leu Thr Gln Cys Ser Asp Ala Glu Gly Thr Ala Val Ala Pro Pro	
1015 1020 1025	
act gtt acc ccg gtt cca agc cta gag gct cct tcc gaa caa gca ccg	3177
Thr Val Thr Pro Val Pro Ser Leu Glu Ala Pro Ser Glu Gln Ala Pro	
1030 1035 1040	
act gag caa agg cct ggg gtg cag gag tgc tac cat ggt aat gga cag	3225
Thr Glu Gln Arg Pro Gly Val Gln Glu Cys Tyr His Gly Asn Gly Gln	
1045 1050 1055 1060	
agt tat cga ggc aca tac tcc acc act gtc aca gga aga acc tgc caa	3273
Ser Tyr Arg Gly Thr Tyr Ser Thr Thr Val Thr Gly Arg Thr Cys Gln	
1065 1070 1075	
gct tgg tca tct atg aca cca cac tcg cat agt cgg acc cca gaa tac	3321
Ala Trp Ser Ser Met Thr Pro His Ser His Ser Arg Thr Pro Glu Tyr	
1080 1085 1090	
tac cca aat gct ggc ttg atc atg aac tac tgc agg aat cca gat gct	3369
Tyr Pro Asn Ala Gly Leu Ile Met Asn Tyr Cys Arg Asn Pro Asp Ala	
1095 1100 1105	
gtg gca gct cct tat tgt tat acg agg gat ccc ggt gtc agg tgg gag	3417
Val Ala Ala Pro Tyr Cys Tyr Thr Arg Asp Pro Gly Val Arg Trp Glu	
1110 1115 1120	
tac tgc aac ctg acg caa tgc tca gac gca gaa ggg act gcc gtc gcg	3465
Tyr Cys Asn Leu Thr Gln Cys Ser Asp Ala Glu Gly Thr Ala Val Ala	
1125 1130 1135 1140	
cct ccg act gtt acc ccg gtt cca agc cta gag gct cct tcc gaa caa	3513
Pro Pro Thr Val Thr Pro Val Pro Ser Leu Glu Ala Pro Ser Glu Gln	
1145 1150 1155	
gca ccg act gag caa agg cct ggg gtg cag gag tgc tac cat ggt aat	3561
Ala Pro Thr Glu Gln Arg Pro Gly Val Gln Glu Cys Tyr His Gly Asn	
1160 1165 1170	

gga cag agt tat cga ggc aca tac tcc acc act gtc aca gga aga acc Gly Gln Ser Tyr Arg Gly Thr Tyr Ser Thr Thr Val Thr Gly Arg Thr 1175 1180 1185	3609
tgc caa gct tgg tca tct atg aca cca cac tcg cat agt cgg acc cca Cys Gln Ala Trp Ser Ser Met Thr Pro His Ser His Ser Arg Thr Pro 1190 1195 1200	3657
gaa tac tac cca aat gct ggc ttg atc atg aac tac tgc agg aat cca Glu Tyr Tyr Pro Asn Ala Gly Leu Ile Met Asn Tyr Cys Arg Asn Pro 1205 1210 1215 1220	3705
gat gct gtg gca gct cct tat tgt tat acg agg gat ccc ggt gtc agg Asp Ala Val Ala Ala Pro Tyr Cys Tyr Thr Arg Asp Pro Gly Val Arg 1225 1230 1235	3753
tgg gag tac tgc aac ctg acg caa tgc tca gac gca gaa ggg act gcc Trp Glu Tyr Cys Asn Leu Thr Gln Cys Ser Asp Ala Glu Gly Thr Ala 1240 1245 1250	3801
gtc gcg cct ccg act gtt acc ccg gtt cca agc cta gag gct cct tcc Val Ala Pro Pro Thr Val Thr Pro Val Pro Ser Leu Glu Ala Pro Ser 1255 1260 1265	3849
gaa caa gca ccg act gag caa agg cct ggg gtg cag gag tgc tac cat Glu Gln Ala Pro Thr Glu Gln Arg Pro Gly Val Gln Glu Cys Tyr His 1270 1275 1280	3897
ggt aat gga cag agt tat cga ggc aca tac tcc acc act gtc aca gga Gly Asn Gly Gln Ser Tyr Arg Gly Thr Tyr Ser Thr Thr Val Thr Gly 1285 1290 1295 1300	3945
aga acc tgc caa gct tgg tca tct atg aca cca cac tcg cat agt cgg Arg Thr Cys Gln Ala Trp Ser Ser Met Thr Pro His Ser His Ser Arg 1305 1310 1315	3993
acc cca gaa tac tac cca aat gct ggc ttg atc atg aac tac tgc agg Thr Pro Glu Tyr Tyr Pro Asn Ala Gly Leu Ile Met Asn Tyr Cys Arg 1320 1325 1330	4041
aat cca gat gct gtg gca gct cct tat tgt tat acg agg gat ccc ggt Asn Pro Asp Ala Val Ala Ala Pro Tyr Cys Tyr Thr Arg Asp Pro Gly 1335 1340 1345	4089
gtc agg tgg gag tac tgc aac ctg acg caa tgc tca gac gca gaa ggg Val Arg Trp Glu Tyr Cys Asn Leu Thr Gln Cys Ser Asp Ala Glu Gly 1350 1355 1360	4137
act gcc gtc gcg cct ccg act gtt acc ccg gtt cca agc cta gag gct Thr Ala Val Ala Pro Thr Val Thr Pro Val Pro Ser Leu Glu Ala 1365 1370 1375 1380	4185
cct tcc gaa caa gca ccg act gag caa agg cct ggg gtg cag gag tgc Pro Ser Glu Gln Ala Pro Thr Glu Gln Arg Pro Gly Val Gln Glu Cys 1385 1390 1395	4233
tac cat ggt aat gga cag agt tat cga ggc aca tac tcc acc act gtc Tyr His Gly Asn Gly Gln Ser Tyr Arg Gly Thr Tyr Ser Thr Thr Val 1400 1405 1410	4281

aca gga aga acc tgc caa gct tgg tca tct atg aca cca cac tcg cat	4329
Thr Gly Arg Thr Cys Gln Ala Trp Ser Ser Met Thr Pro His Ser His	
1415 1420 1425	
agt cgg acc cca gaa tac tac cca aat gct ggc ttg atc atg aac tac	4377
Ser Arg Thr Pro Glu Tyr Tyr Pro Asn Ala Gly Leu Ile Met Asn Tyr	
1430 1435 1440	
tgc agg aat cca gat gct gtg gca gct cct tat tgt tat acg agg gat	4425
Cys Arg Asn Pro Asp Ala Val Ala Ala Pro Tyr Cys Tyr Thr Arg Asp	
1445 1450 1455 1460	
ccc ggt gtc agg tgg gag tac tgc aac ctg acg caa tgc tca gac gca	4473
Pro Gly Val Arg Trp Glu Tyr Cys Asn Leu Thr Gln Cys Ser Asp Ala	
1465 1470 1475	
gaa ggg act gcc gtc gcg cct ccg act gtt acc ccg gtt cca agc cta	4521
Glu Gly Thr Ala Val Ala Pro Pro Thr Val Thr Pro Val Pro Ser Leu	
1480 1485 1490	
gag gct cct tcc gaa caa gca ccg act gag caa agg cct ggg gtg cag	4569
Glu Ala Pro Ser Glu Gln Ala Pro Thr Glu Gln Arg Pro Gly Val Gln	
1495 1500 1505	
gag tgc tac cat ggt aat gga cag agt tat cga ggc aca tac tcc acc	4617
Glu Cys Tyr His Gly Asn Gly Gln Ser Tyr Arg Gly Thr Tyr Ser Thr	
1510 1515 1520	
act gtc aca gga aga acc tgc caa gct tgg tca tct atg aca cca cac	4665
Thr Val Thr Gly Arg Thr Cys Gln Ala Trp Ser Ser Met Thr Pro His	
1525 1530 1535 1540	
tcg cat agt cgg acc cca gaa tac tac cca aat gct ggc ttg atc atg	4713
Ser His Ser Arg Thr Pro Glu Tyr Tyr Pro Asn Ala Gly Leu Ile Met	
1545 1550 1555	
aac tac tgc agg aat cca gat gct gtg gca gct cct tat tgt tat acg	4761
Asn Tyr Cys Arg Asn Pro Asp Ala Val Ala Ala Pro Tyr Cys Tyr Thr	
1560 1565 1570	
agg gat ccc ggt gtc agg tgg gag tac tgc aac ctg acg caa tgc tca	4809
Arg Asp Pro Gly Val Arg Trp Glu Tyr Cys Asn Leu Thr Gln Cys Ser	
1575 1580 1585	
gac gca gaa ggg act gcc gtc gcg cct ccg act gtt acc ccg gtt cca	4857
Asp Ala Glu Gly Thr Ala Val Ala Pro Pro Thr Val Thr Pro Val Pro	
1590 1595 1600	
agc cta gag gct cct tcc gaa caa gca ccg act gag caa agg cct ggg	4905
Ser Leu Glu Ala Pro Ser Glu Gln Ala Pro Thr Glu Gln Arg Pro Gly	
1605 1610 1615 1620	
gtg cag gag tgc tac cat ggt aat gga cag agt tat cga ggc aca tac	4953
Val Gln Glu Cys Tyr His Gly Asn Gly Gln Ser Tyr Arg Gly Thr Tyr	
1625 1630 1635	
tcc acc act gtc aca gga aga acc tgc caa gct tgg tca tct atg aca	5001
Ser Thr Thr Val Thr Gly Arg Thr Cys Gln Ala Trp Ser Ser Met Thr	
1640 1645 1650	

cca cac tcg cat agt cgg acc cca gaa tac tac cca aat gct ggc ttg	5049
Pro His Ser His Ser Arg Thr Pro Glu Tyr Tyr Pro Asn Ala Gly Leu	
1655 1660 1665	
atc atg aac tac tgc agg aat cca gat gct gtg gca gct cct tat tgt	5097
Ile Met Asn Tyr Cys Arg Asn Pro Asp Ala Val Ala Ala Pro Tyr Cys	
1670 1675 1680	
tat acg agg gat ccc ggt gtc agg tgg gag tac tgc aac ctg acg caa	5145
Tyr Thr Arg Asp Pro Gly Val Arg Trp Glu Tyr Cys Asn Leu Thr Gln	
1685 1690 1695 1700	
tgc tca gac gca gaa ggg act gcc gtc gcg cct ccg act gtt acc ccg	5193
Cys Ser Asp Ala Glu Gly Thr Ala Val Ala Pro Pro Thr Val Thr Pro	
1705 1710 1715	
gtt cca agc cta gag gct cct tcc gaa caa gca ccg act gag caa agg	5241
Val Pro Ser Leu Glu Ala Pro Ser Glu Gln Ala Pro Thr Glu Gln Arg	
1720 1725 1730	
cct ggg gtg cag gag tgc tac cat ggt aat gga cag agt tat cga ggc	5289
Pro Gly Val Gln Glu Cys Tyr His Gly Asn Gly Gln Ser Tyr Arg Gly	
1735 1740 1745	
aca tac tcc acc act gtc aca gga aga acc tgc caa gct tgg tca tct	5337
Thr Tyr Ser Thr Thr Val Thr Gly Arg Thr Cys Gln Ala Trp Ser Ser	
1750 1755 1760	
atg aca cca cac tcg cat agt cgg acc cca gaa tac tac cca aat gct	5385
Met Thr Pro His Ser His Ser Arg Thr Pro Glu Tyr Tyr Pro Asn Ala	
1765 1770 1775 1780	
ggc ttg atc atg aac tac tgc agg aat cca gat gct gtg gca gct cct	5433
Gly Leu Ile Met Asn Tyr Cys Arg Asn Pro Asp Ala Val Ala Ala Pro	
1785 1790 1795	
tat tgt tat acg agg gat ccc ggt gtc agg tgg gag tac tgc aac ctg	5481
Tyr Cys Tyr Thr Arg Asp Pro Gly Val Arg Trp Glu Tyr Cys Asn Leu	
1800 1805 1810	
acg caa tgc tca gac gca gaa ggg act gcc gtc gcg cct ccg act gtt	5529
Thr Gln Cys Ser Asp Ala Glu Gly Thr Ala Val Ala Pro Pro Thr Val	
1815 1820 1825	
acc ccg gtt cca agc cta gag gct cct tcc gaa caa gca ccg act gag	5577
Thr Pro Val Pro Ser Leu Glu Ala Pro Ser Glu Gln Ala Pro Thr Glu	
1830 1835 1840	
caa agg cct ggg gtg cag gag tgc tac cat ggt aat gga cag agt tat	5625
Gln Arg Pro Gly Val Gln Glu Cys Tyr His Gly Asn Gly Gln Ser Tyr	
1845 1850 1855 1860	
cga ggc aca tac tcc acc act gtc aca gga aga acc tgc caa gct tgg	5673
Arg Gly Thr Tyr Ser Thr Thr Val Thr Gly Arg Thr Cys Gln Ala Trp	
1865 1870 1875	
tca tct atg aca cca cac tcg cat agt cgg acc cca gaa tac tac cca	5721
Ser Ser Met Thr Pro His Ser His Ser Arg Thr Pro Glu Tyr Tyr Pro	
1880 1885 1890	

aat gct ggc ttg atc atg aac tac tgc agg aat cca gat gct gtg gca Asn Ala Gly Leu Ile Met Asn Tyr Cys Arg Asn Pro Asp Ala Val Ala 1895 1900 1905	5769
gct cct tat tgt tat acg agg gat ccc ggt gtc agg tgg gag tac tgc Ala Pro Tyr Cys Tyr Thr Arg Asp Pro Gly Val Arg Trp Glu Tyr Cys 1910 1915 1920	5817
aac ctg acg caa tgc tca gac gca gaa ggg act gcc gtc gcg cct ccg Asn Leu Thr Gln Cys Ser Asp Ala Glu Gly Thr Ala Val Ala Pro Pro 1925 1930 1935 1940	5865
act gtt acc ccg gtt cca agc cta gag gct cct tcc gaa caa gca ccg Thr Val Thr Pro Val Pro Ser Leu Glu Ala Pro Ser Glu Gln Ala Pro 1945 1950 1955	5913
act gag caa agg cct ggg gtg cag gag tgc tac cat ggt aat gga cag Thr Glu Gln Arg Pro Gly Val Gln Glu Cys Tyr His Gly Asn Gly Gln 1960 1965 1970	5961
agt tat cga ggc aca tac tcc acc act gtc aca gga aga acc tgc caa Ser Tyr Arg Gly Thr Tyr Ser Thr Thr Val Thr Gly Arg Thr Cys Gln 1975 1980 1985	6009
gct tgg tca tct atg aca cca cac tcg cat agt cgg acc cca gaa tac Ala Trp Ser Ser Met Thr Pro His Ser His Ser Arg Thr Pro Glu Tyr 1990 1995 2000	6057
tac cca aat gct ggc ttg atc atg aac tac tgc agg aat cca gat gct Tyr Pro Asn Ala Gly Leu Ile Met Asn Tyr Cys Arg Asn Pro Asp Ala 2005 2010 2015 2020	6105
gtg gca gct cct tat tgt tat acg agg gat ccc ggt gtc agg tgg gag Val Ala Ala Pro Tyr Cys Tyr Thr Arg Asp Pro Gly Val Arg Trp Glu 2025 2030 2035	6153
tac tgc aac ctg acg caa tgc tca gac gca gaa ggg act gcc gtc gcg Tyr Cys Asn Leu Thr Gln Cys Ser Asp Ala Glu Gly Thr Ala Val Ala 2040 2045 2050	6201
cct ccg act gtt acc ccg gtt cca agc cta gag gct cct tcc gaa caa Pro Pro Thr Val Thr Pro Val Pro Ser Leu Glu Ala Pro Ser Glu Gln 2055 2060 2065	6249
gca ccg act gag caa agg cct ggg gtg cag gag tgc tac cat ggt aat Ala Pro Thr Glu Gln Arg Pro Gly Val Gln Glu Cys Tyr His Gly Asn 2070 2075 2080	6297
gga cag agt tat cga ggc aca tac tcc acc act gtc aca gga aga acc Gly Gln Ser Tyr Arg Gly Thr Tyr Ser Thr Thr Val Thr Gly Arg Thr 2085 2090 2095 2100	6345
tgc caa gct tgg tca tct atg aca cca cac tcg cat agt cgg acc cca Cys Gln Ala Trp Ser Ser Met Thr Pro His Ser His Ser Arg Thr Pro 2105 2110 2115	6393
gaa tac tac cca aat gct ggc ttg atc atg aac tac tgc agg aat cca Glu Tyr Tyr Pro Asn Ala Gly Leu Ile Met Asn Tyr Cys Arg Asn Pro 2120 2125 2130	6441

gat gct gtg gca gct cct tat tgt tat acg agg gat ccc ggt gtc agg Asp Ala Val Ala Ala Pro Tyr Cys Tyr Thr Arg Asp Pro Gly Val Arg 2135 2140 2145	6489
tgg gag tac tgc aac ctg acg caa tgc tca gac gca gaa ggg act gcc Trp Glu Tyr Cys Asn Leu Thr Gln Cys Ser Asp Ala Glu Gly Thr Ala 2150 2155 2160	6537
gtc gcg cct ccg act gtt acc ccg gtt cca agc cta gag gct cct tcc Val Ala Pro Pro Thr Val Thr Pro Val Pro Ser Leu Glu Ala Pro Ser 2165 2170 2175 2180	6585
gaa caa gca ccg act gag caa agg cct ggg gtg cag gag tgc tac cat Glu Gln Ala Pro Thr Glu Gln Arg Pro Gly Val Gln Glu Cys Tyr His 2185 2190 2195	6633
ggg aat gga cag agt tat cga ggc aca tac tcc acc act gtc aca gga Gly Asn Gly Gln Ser Tyr Arg Gly Thr Tyr Ser Thr Thr Val Thr Gly 2200 2205 2210	6681
aga acc tgc caa gct tgg tca tct atg aca cca cac tcg cat agt cgg Arg Thr Cys Gln Ala Trp Ser Ser Met Thr Pro His Ser His Ser Arg 2215 2220 2225	6729
acc cca gaa tac tac cca aat gct ggc ttg atc atg aac tac tgc agg Thr Pro Glu Tyr Tyr Pro Asn Ala Gly Leu Ile Met Asn Tyr Cys Arg 2230 2235 2240	6777
aat cca gat gct gtg gca gct cct tat tgt tat acg agg gat ccc ggt Asn Pro Asp Ala Val Ala Ala Pro Tyr Cys Tyr Thr Arg Asp Pro Gly 2245 2250 2255 2260	6825
gtc agg tgg gag tac tgc aac ctg acg caa tgc tca gac gca gaa ggg Val Arg Trp Glu Tyr Cys Asn Leu Thr Gln Cys Ser Asp Ala Glu Gly 2265 2270 2275	6873
act gcc gtc gcg cct ccg act gtt acc ccg gtt cca agc cta gag gct Thr Ala Val Ala Pro Pro Thr Val Thr Pro Val Pro Ser Leu Glu Ala 2280 2285 2290	6921
cct tcc gaa caa gca ccg act gag caa agg cct ggg gtg cag gag tgc Pro Ser Glu Gln Ala Pro Thr Glu Gln Arg Pro Gly Val Gln Glu Cys 2295 2300 2305	6969
tac cat ggt aat gga cag agt tat cga ggc aca tac tcc acc act gtc Tyr His Gly Asn Gly Gln Ser Tyr Arg Gly Thr Tyr Ser Thr Thr Val 2310 2315 2320	7017
aca gga aga acc tgc caa gct tgg tca tct atg aca cca cac tcg cat Thr Gly Arg Thr Cys Gln Ala Trp Ser Ser Met Thr Pro His Ser His 2325 2330 2335 2340	7065
agt cgg acc cca gaa tac tac cca aat gct ggc ttg atc atg aac tac Ser Arg Thr Pro Glu Tyr Tyr Pro Asn Ala Gly Leu Ile Met Asn Tyr 2345 2350 2355	7113
tgc agg aat cca gat gct gtg gca gct cct tat tgt tat acg agg gat Cys Arg Asn Pro Asp Ala Val Ala Ala Pro Tyr Cys Tyr Thr Arg Asp 2360 2365 2370	7161

ccc ggt gtc agg tgg gag tac tgc aac ctg acg caa tgc tca gac gca Pro Gly Val Arg Trp Glu Tyr Cys Asn Leu Thr Gln Cys Ser Asp Ala 2375 2380 2385	7209
gaa ggg act gcc gtc gcg cct ccg act gtt acc ccg gtt cca agc cta Glu Gly Thr Ala Val Ala Pro Pro Thr Val Thr Pro Val Pro Ser Leu 2390 2395 2400	7257
gag gct cct tcc gaa caa gca ccg act gag caa agg cct ggg gtg cag Glu Ala Pro Ser Glu Gln Ala Pro Thr Glu Gln Arg Pro Gly Val Gln 2405 2410 2415 2420	7305
gag tgc tac cat ggt aat gga cag agt tat cga ggc aca tac tcc acc Glu Cys Tyr His Gly Asn Gly Gln Ser Tyr Arg Gly Thr Tyr Ser Thr 2425 2430 2435	7353
act gtc aca gga aga acc tgc caa gct tgg tca tct atg aca cca cac Thr Val Thr Gly Arg Thr Cys Gln Ala Trp Ser Ser Met Thr Pro His 2440 2445 2450	7401
tcg cat agt ccg acc cca gaa tac tac cca aat gct ggc ttg atc atg Ser His Ser Arg Thr Pro Glu Tyr Tyr Pro Asn Ala Gly Leu Ile Met 2455 2460 2465	7449
aac tac tgc agg aat cca gat gct gtg gca gct cct tat tgt tat acg Asn Tyr Cys Arg Asn Pro Asp Ala Val Ala Ala Pro Tyr Cys Tyr Thr 2470 2475 2480	7497
agg gat ccc ggt gtc agg tgg gag tac tgc aac ctg acg caa tgc tca Arg Asp Pro Gly Val Arg Trp Glu Tyr Cys Asn Leu Thr Gln Cys Ser 2485 2490 2495 2500	7545
gac gca gaa ggg act gcc gtc gcg cct ccg act gtt acc ccg gtt cca Asp Ala Glu Gly Thr Ala Val Ala Pro Pro Thr Val Thr Pro Val Pro 2505 2510 2515	7593
agc cta gag gct cct tcc gaa caa gca ccg act gag caa agg cct ggg Ser Leu Glu Ala Pro Ser Glu Gln Ala Pro Thr Glu Gln Arg Pro Gly 2520 2525 2530	7641
gtg cag gag tgc tac cat ggt aat gga cag agt tat cga ggc aca tac Val Gln Glu Cys Tyr His Gly Asn Gly Gln Ser Tyr Arg Gly Thr Tyr 2535 2540 2545	7689
tcc acc act gtc aca gga aga acc tgc caa gct tgg tca tct atg aca Ser Thr Thr Val Thr Gly Arg Thr Cys Gln Ala Trp Ser Ser Met Thr 2550 2555 2560	7737
cca cac tcg cat agt ccg acc cca gaa tac tac cca aat gct ggc ttg Pro His Ser His Ser Arg Thr Pro Glu Tyr Tyr Pro Asn Ala Gly Leu 2565 2570 2575 2580	7785
atc atg aac tac tgc agg aat cca gat gct gtg gca gct cct tat tgt Ile Met Asn Tyr Cys Arg Asn Pro Asp Ala Val Ala Ala Pro Tyr Cys 2585 2590 2595	7833
tat acg agg gat ccc ggt gtc agg tgg gag tac tgc aac ctg acg caa Tyr Thr Arg Asp Pro Gly Val Arg Trp Glu Tyr Cys Asn Leu Thr Gln 2600 2605 2610	7881

tgc tca gac gca gaa ggg act gcc gtc gcg cct ccg act gtt acc ccg Cys Ser Asp Ala Glu Gly Thr Ala Val Ala Pro Pro Thr Val Thr Pro 2615 2620 2625	7929
gtt cca agc cta gag gct cct tcc gaa caa gca ccg act gag cag agg Val Pro Ser Leu Glu Ala Pro Ser Glu Gln Ala Pro Thr Glu Gln Arg 2630 2635 2640	7977
cct ggg gtg cag gag tgc tac cac ggt aat gga cag agt tat cga ggc Pro Gly Val Gln Glu Cys Tyr His Gly Asn Gly Gln Ser Tyr Arg Gly 2645 2650 2655 2660	8025
aca tac tcc acc act gtc act gga aga acc tgc caa gct tgg tca tct Thr Tyr Ser Thr Thr Val Thr Gly Arg Thr Cys Gln Ala Trp Ser Ser 2665 2670 2675	8073
atg aca cca cac tcg cat agt cgg acc cca gaa tac tac cca aat gct Met Thr Pro His Ser His Ser Arg Thr Pro Glu Tyr Tyr Pro Asn Ala 2680 2685 2690	8121
ggc ttg atc atg aac tac tgc agg aat cca gat gct gtg gca gct cct Gly Leu Ile Met Asn Tyr Cys Arg Asn Pro Asp Ala Val Ala Ala Pro 2695 2700 2705	8169
tat tgt tat acg agg gat ccc ggt gtc agg tgg gag tac tgc aac ctg Tyr Cys Tyr Thr Arg Asp Pro Gly Val Arg Trp Glu Tyr Cys Asn Leu 2710 2715 2720	8217
acg caa tgc tca gac gca gaa ggg act gcc gtc gcg cct ccg act gtt Thr Gln Cys Ser Asp Ala Glu Gly Thr Ala Val Ala Pro Pro Thr Val 2725 2730 2735 2740	8265
acc ccg gtt cca agc cta gag gct cct tcc gaa caa gca ccg act gag Thr Pro Val Pro Ser Leu Glu Ala Pro Ser Glu Gln Ala Pro Thr Glu 2745 2750 2755	8313
caa agg cct ggg gtg cag gag tgc tac cat ggt aat gga cag agt tat Gln Arg Pro Gly Val Gln Glu Cys Tyr His Gly Asn Gly Gln Ser Tyr 2760 2765 2770	8361
cga ggc aca tac tcc acc act gtc aca gga aga acc tgc caa gct tgg Arg Gly Thr Tyr Ser Thr Thr Val Thr Gly Arg Thr Cys Gln Ala Trp 2775 2780 2785	8409
tca tct atg aca cca cac tcg cat agt cgg acc cca gaa tac tac cca Ser Ser Met Thr Pro His Ser His Ser Arg Thr Pro Glu Tyr Tyr Pro 2790 2795 2800	8457
aat gct ggc ttg atc atg aac tac tgc agg aat cca gat gct gtg gca Asn Ala Gly Leu Ile Met Asn Tyr Cys Arg Asn Pro Asp Ala Val Ala 2805 2810 2815 2820	8505
gct cct tat tgt tat acg agg gat ccc ggt gtc agg tgg gag tac tgc Ala Pro Tyr Cys Tyr Thr Arg Asp Pro Gly Val Arg Trp Glu Tyr Cys 2825 2830 2835	8553
aac ctg acg caa tgc tca gac gca gaa ggg act gcc gtc gcg cct ccg Asn Leu Thr Gln Cys Ser Asp Ala Glu Gly Thr Ala Val Ala Pro Pro 2840 2845 2850	8601

act gtt acc ccg gtt cca agc cta gag gct cct tcc gaa caa gca ccg	8649
Thr Val Thr Pro Val Pro Ser Leu Glu Ala Pro Ser Glu Gln Ala Pro	
2855 2860 2865	
act gag caa agg cct ggg gtg cag gag tgc tac cat ggt aat gga cag	8697
Thr Glu Gln Arg Pro Gly Val Gln Glu Cys Tyr His Gly Asn Gly Gln	
2870 2875 2880	
agt tat cga ggc aca tac tcc acc act gtc aca gga aga acc tgc caa	8745
Ser Tyr Arg Gly Thr Tyr Ser Thr Thr Val Thr Gly Arg Thr Cys Gln	
2885 2890 2895 2900	
gct tgg tca tct atg aca cca cac tcg cat agt cgg acc cca gaa tac	8793
Ala Trp Ser Ser Met Thr Pro His Ser His Ser Arg Thr Pro Glu Tyr	
2905 2910 2915	
tac cca aat gct ggc ttg atc atg aac tac tgc agg aat cca gat gct	8841
Tyr Pro Asn Ala Gly Leu Ile Met Asn Tyr Cys Arg Asn Pro Asp Ala	
2920 2925 2930	
gtg gca gct cct tat tgt tat acg agg gat ccc ggt gtc agg tgg gag	8889
Val Ala Ala Pro Tyr Cys Tyr Thr Arg Asp Pro Gly Val Arg Trp Glu	
2935 2940 2945	
tac tgc aac ctg acg caa tgc tca gac gca gaa ggg act gcc gtc gcg	8937
Tyr Cys Asn Leu Thr Gln Cys Ser Asp Ala Glu Gly Thr Ala Val Ala	
2950 2955 2960	
cct ccg act gtt acc ccg gtt cca agc cta gag gct cct tcc gaa caa	8985
Pro Pro Thr Val Thr Pro Val Pro Ser Leu Glu Ala Pro Ser Glu Gln	
2965 2970 2975 2980	
gca ccg act gag cag agg cct ggg gtg cag gag tgc tac cac ggt aat	9033
Ala Pro Thr Glu Gln Arg Pro Gly Val Gln Glu Cys Tyr His Gly Asn	
2985 2990 2995	
gga cag agt tat cga ggc aca tac tcc acc act gtc act gga aga acc	9081
Gly Gln Ser Tyr Arg Gly Thr Tyr Ser Thr Thr Val Thr Gly Arg Thr	
3000 3005 3010	
tgc caa gct tgg tca tct atg aca cca cac tcg cat agt cgg acc cca	9129
Cys Gln Ala Trp Ser Ser Met Thr Pro His Ser His Ser Arg Thr Pro	
3015 3020 3025	
gaa tac tac cca aat gct ggc ttg atc atg aac tac tgc agg aat cca	9177
Glu Tyr Tyr Pro Asn Ala Gly Leu Ile Met Asn Tyr Cys Arg Asn Pro	
3030 3035 3040	
gat gct gtg gca gct cct tat tgt tat acg agg gat ccc ggt gtc agg	9225
Asp Ala Val Ala Ala Pro Tyr Cys Tyr Thr Arg Asp Pro Gly Val Arg	
3045 3050 3055 3060	
tgg gag tac tgc aac ctg acg caa tgc tca gac gca gaa ggg act gcc	9273
Trp Glu Tyr Cys Asn Leu Thr Gln Cys Ser Asp Ala Glu Gly Thr Ala	
3065 3070 3075	
gtc gcg cct ccg act gtt acc ccg gtt cca agc cta gag gct cct tcc	9321
Val Ala Pro Pro Thr Val Thr Pro Val Pro Ser Leu Glu Ala Pro Ser	
3080 3085 3090	

gaa caa gca ccg act gag cag agg cct ggg gtg cag gag tgc tac cac	9369
Glu Gln Ala Pro Thr Glu Gln Arg Pro Gly Val Gln Glu Cys Tyr His	
3095 3100 3105	
ggt aat gga cag agt tat cga ggc aca tac tcc acc act gtc act gga	9417
Gly Asn Gly Gln Ser Tyr Arg Gly Thr Tyr Ser Thr Thr Val Thr Gly	
3110 3115 3120	
aga acc tgc caa gct tgg tca tct atg aca cca cac tcg cat agt cgg	9465
Arg Thr Cys Gln Ala Trp Ser Ser Met Thr Pro His Ser His Ser Arg	
3125 3130 3135 3140	
acc cca gaa tac tac cca aat gct ggc ttg atc atg aac tac tgc agg	9513
Thr Pro Glu Tyr Tyr Pro Asn Ala Gly Leu Ile Met Asn Tyr Cys Arg	
3145 3150 3155	
aat cca gat gct gtg gca gct cct tat tgt tat acg agg gat ccc ggt	9561
Asn Pro Asp Ala Val Ala Ala Pro Tyr Cys Tyr Thr Arg Asp Pro Gly	
3160 3165 3170	
gtc agg tgg gag tac tgc aac ctg acg caa tgc tca gac gca gaa ggg	9609
Val Arg Trp Glu Tyr Cys Asn Leu Thr Gln Cys Ser Asp Ala Glu Gly	
3175 3180 3185	
act gcc gtc gcg cct ccg act gtt acc ccg gtt cca agc cta gag gct	9657
Thr Ala Val Ala Pro Pro Thr Val Thr Pro Val Pro Ser Leu Glu Ala	
3190 3195 3200	
cct tcc gaa caa gca ccg act gag cag agg cct ggg gtg cag gag tgc	9705
Pro Ser Glu Gln Ala Pro Thr Glu Gln Arg Pro Gly Val Gln Glu Cys	
3205 3210 3215 3220	
tac cac ggt aat gga cag agt tat cga ggc aca tac tcc acc act gtc	9753
Tyr His Gly Asn Gly Gln Ser Tyr Arg Gly Thr Tyr Ser Thr Thr Val	
3225 3230 3235	
act gga aga acc tgc caa gct tgg tca tct atg aca cca cac tcg cat	9801
Thr Gly Arg Thr Cys Gln Ala Trp Ser Ser Met Thr Pro His Ser His	
3240 3245 3250	
agt cgg acc cca gaa tac tac cca aat gct ggc ttg atc atg aac tac	9849
Ser Arg Thr Pro Glu Tyr Tyr Pro Asn Ala Gly Leu Ile Met Asn Tyr	
3255 3260 3265	
tgc agg aat cca gat gct gtg gca gct cct tat tgt tat acg agg gat	9897
Cys Arg Asn Pro Asp Ala Val Ala Ala Pro Tyr Cys Tyr Thr Arg Asp	
3270 3275 3280	
ccc ggt gtc agg tgg gag tac tgc aac ctg acg caa tgc tca gac gca	9945
Pro Gly Val Arg Trp Glu Tyr Cys Asn Leu Thr Gln Cys Ser Asp Ala	
3285 3290 3295 3300	
gaa ggg act gcc gtc gcg cct ccg act gtt acc ccg gtt cca agc cta	9993
Glu Gly Thr Ala Val Ala Pro Pro Thr Val Thr Pro Val Pro Ser Leu	
3305 3310 3315	
gag gct cct tcc gaa caa gca ccg act gag cag agg cct ggg gtg cag	10041
Glu Ala Pro Ser Glu Gln Ala Pro Thr Glu Gln Arg Pro Gly Val Gln	
3320 3325 3330	

gag tgc tac cac ggt aat gga cag agt tat cga ggc aca tac tcc acc	10089
Glu Cys Tyr His Gly Asn Gly Gln Ser Tyr Arg Gly Thr Tyr Ser Thr	
3335 3340 3345	
act gtc act gga aga acc tgc caa gct tgg tca tct atg aca cca cac	10137
Thr Val Thr Gly Arg Thr Cys Gln Ala Trp Ser Ser Met Thr Pro His	
3350 3355 3360	
tcg cat agt cgg acc cca gaa tac tac cca aat gct ggc ttg atc atg	10185
Ser His Ser Arg Thr Pro Glu Tyr Tyr Pro Asn Ala Gly Leu Ile Met	
3365 3370 3375 3380	
aac tac tgc agg aat cca gat cct gtg gca gcc cct tat tgt tat acg	10233
Asn Tyr Cys Arg Asn Pro Asp Pro Val Ala Ala Pro Tyr Cys Tyr Thr	
3385 3390 3395	
agg gat ccc agt gtc agg tgg gag tac tgc aac ctg aca caa tgc tca	10281
Arg Asp Pro Ser Val Arg Trp Glu Tyr Cys Asn Leu Thr Gln Cys Ser	
3400 3405 3410	
gac gca gaa ggg act gcc gtc gcg cct cca act att acc ccg att cca	10329
Asp Ala Glu Gly Thr Ala Val Ala Pro Pro Thr Ile Thr Pro Ile Pro	
3415 3420 3425	
agc cta gag gct cct tct gaa caa gca cca act gag caa agg cct ggg	10377
Ser Leu Glu Ala Pro Ser Glu Gln Ala Pro Thr Glu Gln Arg Pro Gly	
3430 3435 3440	
gtg cag gag tgc tac cac gga aat gga cag agt tat caa ggc aca tac	10425
Val Gln Glu Cys Tyr His Gly Asn Gly Gln Ser Tyr Gln Gly Thr Tyr	
3445 3450 3455 3460	
ttc att act gtc aca gga aga acc tgc caa gct tgg tca tct atg aca	10473
Phe Ile Thr Val Thr Gly Arg Thr Cys Gln Ala Trp Ser Ser Met Thr	
3465 3470 3475	
cca cac tcg cat agt cgg acc cca gca tac tac cca aat gct ggc ttg	10521
Pro His Ser His Ser Arg Thr Pro Ala Tyr Tyr Pro Asn Ala Gly Leu	
3480 3485 3490	
atc aag aac tac tgc cga aat cca gat cct gtg gca gcc cct tgg tgt	10569
Ile Lys Asn Tyr Cys Arg Asn Pro Asp Pro Val Ala Ala Pro Trp Cys	
3495 3500 3505	
tat aca aca gat ccc agt gtc agg tgg gag tac tgc aac ctg aca cga	10617
Tyr Thr Thr Asp Pro Ser Val Arg Trp Glu Tyr Cys Asn Leu Thr Arg	
3510 3515 3520	
tgc tca gat gca gaa tgg act gcc ttc gtc cct ccg aat gtt att ctg	10665
Cys Ser Asp Ala Glu Trp Thr Ala Phe Val Pro Pro Asn Val Ile Leu	
3525 3530 3535 3540	
gct cca agc cta gag gct ttt ttt gaa caa gca ctg act gag gaa acc	10713
Ala Pro Ser Leu Glu Ala Phe Phe Glu Gln Ala Leu Thr Glu Glu Thr	
3545 3550 3555	
ccc ggg gta cag gac tgc tac tac cat tat gga cag agt tac cga ggc	10761
Pro Gly Val Gln Asp Cys Tyr Tyr His Tyr Gly Gln Ser Tyr Arg Gly	
3560 3565 3570	

aca tac tcc acc act gtc aca gga aga act tgc caa gct tgg tca tct	10809
Thr Tyr Ser Thr Thr Val Thr Gly Arg Thr Cys Gln Ala Trp Ser Ser	
3575 3580 3585	
atg aca cca cac cag cat agt cgg acc cca gaa aac tac cca aat gct	10857
Met Thr Pro His Gln His Ser Arg Thr Pro Glu Asn Tyr Pro Asn Ala	
3590 3595 3600	
ggc ctg acc agg aac tac tgc agg aat cca gat gct gag att cgc cct	10905
Gly Leu Thr Arg Asn Tyr Cys Arg Asn Pro Asp Ala Glu Ile Arg Pro	
3605 3610 3615 3620	
tgg tgt tac acc atg gat ccc agt gtc agg tgg gag tac tgc aac ctg	10953
Trp Cys Tyr Thr Met Asp Pro Ser Val Arg Trp Glu Tyr Cys Asn Leu	
3625 3630 3635	
aca caa tgc ctg gtg aca gaa tca agt gtc ctt gca act ctc acg gtg	11001
Thr Gln Cys Leu Val Thr Glu Ser Ser Val Leu Ala Thr Leu Thr Val	
3640 3645 3650	
gtc cca gat cca agc aca gag gct tct tct gaa gaa gca cca acg gag	11049
Val Pro Asp Pro Ser Thr Glu Ala Ser Ser Glu Glu Ala Pro Thr Glu	
3655 3660 3665	
caa agc ccc ggg gtc cag gat tgc tac cat ggt gat gga cag agt tat	11097
Gln Ser Pro Gly Val Gln Asp Cys Tyr His Gly Asp Gly Gln Ser Tyr	
3670 3675 3680	
cga ggc tca ttc tct acc act gtc aca gga agg aca tgt cag tct tgg	11145
Arg Gly Ser Phe Ser Thr Thr Val Thr Gly Arg Thr Cys Gln Ser Trp	
3685 3690 3695 3700	
tcc tct atg aca cca cac tgg cat cag agg aca aca gaa tat tat cca	11193
Ser Ser Met Thr Pro His Trp His Gln Arg Thr Thr Glu Tyr Tyr Pro	
3705 3710 3715	
aat ggt ggc ctg acc agg aac tac tgc agg aat cca gat gct gag att	11241
Asn Gly Gly Leu Thr Arg Asn Tyr Cys Arg Asn Pro Asp Ala Glu Ile	
3720 3725 3730	
agt cct tgg tgt tat acc atg gat ccc aat gtc aga tgg gag tac tgc	11289
Ser Pro Trp Cys Tyr Thr Met Asp Pro Asn Val Arg Trp Glu Tyr Cys	
3735 3740 3745	
aac ctg aca caa tgt cca gtg aca gaa tca agt gtc ctt gcg acg tcc	11337
Asn Leu Thr Gln Cys Pro Val Thr Glu Ser Ser Val Leu Ala Thr Ser	
3750 3755 3760	
acg gct gtt tct gaa caa gca cca acg gag caa agc ccc aca gtc cag	11385
Thr Ala Val Ser Glu Gln Ala Pro Thr Glu Gln Ser Pro Thr Val Gln	
3765 3770 3775 3780	
gac tgc tac cat ggt gat gga cag agt tat cga ggc tca ttc tcc acc	11433
Asp Cys Tyr His Gly Asp Gly Gln Ser Tyr Arg Gly Ser Phe Ser Thr	
3785 3790 3795	
act gtt aca gga agg aca tgt cag tct tgg tcc tct atg aca cca cac	11481
Thr Val Thr Gly Arg Thr Cys Gln Ser Trp Ser Ser Met Thr Pro His	
3800 3805 3810	

tgg cat cag aga acc aca gaa tac tac cca aat ggt ggc ctg acc agg	11529
Trp His Gln Arg Thr Thr Glu Tyr Tyr Pro Asn Gly Gly Leu Thr Arg	
3815 3820 3825	
aac tac tgc agg aat cca gat gct gag att cgc cct tgg tgt tat acc	11577
Asn Tyr Cys Arg Asn Pro Asp Ala Glu Ile Arg Pro Trp Cys Tyr Thr	
3830 3835 3840	
atg gat ccc agt gtc aga tgg gag tac tgc aac ctg acg caa tgt cca	11625
Met Asp Pro Ser Val Arg Trp Glu Tyr Cys Asn Leu Thr Gln Cys Pro	
3845 3850 3855 3860	
gtg atg gaa tca act ctc ctc aca act ccc acg gtg gtc cca gtt cca	11673
Val Met Glu Ser Thr Leu Leu Thr Thr Pro Thr Val Val Pro Val Pro	
3865 3870 3875	
agc aca gag ctt cct tct gaa gaa gca cca act gaa aac agc act ggg	11721
Ser Thr Glu Leu Pro Ser Glu Glu Ala Pro Thr Glu Asn Ser Thr Gly	
3880 3885 3890	
gtc cag gac tgc tac cga ggt gat gga cag agt tat cga ggc aca ctc	11769
Val Gln Asp Cys Tyr Arg Gly Asp Gly Gln Ser Tyr Arg Gly Thr Leu	
3895 3900 3905	
tcc acc act atc aca gga aga aca tgt cag tct tgg tcg tct atg aca	11817
Ser Thr Thr Ile Thr Gly Arg Thr Cys Gln Ser Trp Ser Ser Met Thr	
3910 3915 3920	
cca cat tgg cat cgg agg atc cca tta tac tat cca aat gct ggc ctg	11865
Pro His Trp His Arg Arg Ile Pro Leu Tyr Tyr Pro Asn Ala Gly Leu	
3925 3930 3935 3940	
acc agg aac tac tgc agg aat cca gat gct gag att cgc cct tgg tgt	11913
Thr Arg Asn Tyr Cys Arg Asn Pro Asp Ala Glu Ile Arg Pro Trp Cys	
3945 3950 3955	
tac acc atg gat ccc agt gtc agg tgg gag tac tgc aac ctg aca cga	11961
Tyr Thr Met Asp Pro Ser Val Arg Trp Glu Tyr Cys Asn Leu Thr Arg	
3960 3965 3970	
tgt cca gtg aca gaa tcg agt gtc ctc aca act ccc aca gtg gcc ccg	12009
Cys Pro Val Thr Glu Ser Ser Val Leu Thr Thr Pro Thr Val Ala Pro	
3975 3980 3985	
gtt cca agc aca gag gct cct tct gaa caa gca cca cct gag aaa agc	12057
Val Pro Ser Thr Glu Ala Pro Ser Glu Gln Ala Pro Pro Glu Lys Ser	
3990 3995 4000	
cct gtg gtc cag gat tgc tac cat ggt gat gga cgg agt tat cga ggc	12105
Pro Val Val Gln Asp Cys Tyr His Gly Asp Gly Arg Ser Tyr Arg Gly	
4005 4010 4015 4020	
ata tcc tcc acc act gtc aca gga agg acc tgt caa tct tgg tca tct	12153
Ile Ser Ser Thr Thr Val Thr Gly Arg Thr Cys Gln Ser Trp Ser Ser	
4025 4030 4035	
atg ata cca cac tgg cat cag agg acc cca gaa aac tac cca aat gct	12201
Met Ile Pro His Trp His Gln Arg Thr Pro Glu Asn Tyr Pro Asn Ala	
4040 4045 4050	

ggc ctg acc gag aac tac tgc agg aat cca gat tct ggg aaa caa ccc	12249
Gly Leu Thr Glu Asn Tyr Cys Arg Asn Pro Asp Ser Gly Lys Gln Pro	
4055 4060 4065	
tgg tgt tac aca acc gat ccg tgt gtg agg tgg gag tac tgc aat ctg	12297
Trp Cys Tyr Thr Thr Asp Pro Cys Val Arg Trp Glu Tyr Cys Asn Leu	
4070 4075 4080	
aca caa tgc tca gaa aca gaa tca ggt gtc cta gag act ccc act gtt	12345
Thr Gln Cys Ser Glu Thr Glu Ser Gly Val Leu Glu Thr Pro Thr Val	
4085 4090 4095 4100	
gtt cca gtt cca agc atg gag gct cat tct gaa gca gca cca act gag	12393
Val Pro Val Pro Ser Met Glu Ala His Ser Glu Ala Ala Pro Thr Glu	
4105 4110 4115	
caa acc cct gtg gtc cgg cag tgc tac cat ggt aat ggc cag agt tat	12441
Gln Thr Pro Val Val Arg Gln Cys Tyr His Gly Asn Gly Gln Ser Tyr	
4120 4125 4130	
cga ggc aca ttc tcc acc act gtc aca gga agg aca tgt caa tct tgg	12489
Arg Gly Thr Phe Ser Thr Thr Val Thr Gly Arg Thr Cys Gln Ser Trp	
4135 4140 4145	
tca tcc atg aca cca cac cgg cat cag agg acc cca gaa aac tac cca	12537
Ser Ser Met Thr Pro His Arg His Gln Arg Thr Pro Glu Asn Tyr Pro	
4150 4155 4160	
aat gat ggc ctg aca atg aac tac tgc agg aat cca gat gcc gat aca	12585
Asn Asp Gly Leu Thr Met Asn Tyr Cys Arg Asn Pro Asp Ala Asp Thr	
4165 4170 4175 4180	
ggc cct tgg tgt ttt acc atg gac ccc agc atc agg tgg gag tac tgc	12633
Gly Pro Trp Cys Phe Thr Met Asp Pro Ser Ile Arg Trp Glu Tyr Cys	
4185 4190 4195	
aac ctg acg cga tgc tca gac aca gaa ggg act gtg gtc gct cct ccg	12681
Asn Leu Thr Arg Cys Ser Asp Thr Glu Gly Thr Val Val Ala Pro Pro	
4200 4205 4210	
act gtc atc cag gtt cca agc cta ggg cct cct tct gaa caa gac tgt	12729
Thr Val Ile Gln Val Pro Ser Leu Gly Pro Pro Ser Glu Gln Asp Cys	
4215 4220 4225	
atg ttt ggg aat ggg aaa gga tac ccg ggc aag aag gca acc act gtt	12777
Met Phe Gly Asn Gly Lys Gly Tyr Arg Gly Lys Lys Ala Thr Thr Val	
4230 4235 4240	
act ggg acg cca tgc cag gaa tgg gct gcc cag gag ccc cat aga cac	12825
Thr Gly Thr Pro Cys Gln Glu Trp Ala Ala Gln Glu Pro His Arg His	
4245 4250 4255 4260	
agc acg ttc att cca ggg aca aat aaa tgg gca ggt ctg gaa aaa aat	12873
Ser Thr Phe Ile Pro Gly Thr Asn Lys Trp Ala Gly Leu Glu Lys Asn	
4265 4270 4275	
tac tgc cgt aac cct gat ggt gac atc aat ggt ccc tgg tgc tac aca	12921
Tyr Cys Arg Asn Pro Asp Gly Asp Ile Asn Gly Pro Trp Cys Tyr Thr	
4280 4285 4290	

atg aat cca aga aaa ctt ttt gac tac tgt gat atc cct ctc tgt gca	12969
Met Asn Pro Arg Lys Leu Phe Asp Tyr Cys Asp Ile Pro Leu Cys Ala	
4295 4300 4305	
tcc tct tca ttt gat tgt ggg aag cct caa gtg gag ccg aag aaa tgt	13017
Ser Ser Ser Phe Asp Cys Gly Lys Pro Gln Val Glu Pro Lys Lys Cys	
4310 4315 4320	
cct gga agc att gta ggg ggg tgt gtg gcc cac cca cat tcc tgg ccc	13065
Pro Gly Ser Ile Val Gly Gly Cys Val Ala His Pro His Ser Trp Pro	
4325 4330 4335 4340	
tgg caa gtc agt ctc aga aca agg ttt gga aag cac ttc tgt gga ggc	13113
Trp Gln Val Ser Leu Arg Thr Arg Phe Gly Lys His Phe Cys Gly Gly	
4345 4350 4355	
acc tta ata tcc cca gag tgg gtg ctg act gct gct cac tgc ttg aag	13161
Thr Leu Ile Ser Pro Glu Trp Val Leu Thr Ala Ala His Cys Leu Lys	
4360 4365 4370	
aag tcc tca agg cct tca tcc tac aag gtc atc ctg ggt gca cac caa	13209
Lys Ser Ser Arg Pro Ser Ser Tyr Lys Val Ile Leu Gly Ala His Gln	
4375 4380 4385	
gaa gtg aac ctc gaa tct cat gtt cag gaa ata gaa gtg tct agg ctg	13257
Glu Val Asn Leu Glu Ser His Val Gln Glu Ile Glu Val Ser Arg Leu	
4390 4395 4400	
ttc ttg gag ccc aca caa gca gat att gcc ttg cta aag cta agc agg	13305
Phe Leu Glu Pro Thr Gln Ala Asp Ile Ala Leu Leu Lys Leu Ser Arg	
4405 4410 4415 4420	
cct gcc gtc atc act gac aaa gta atg cca gct tgt ctg cca tcc cca	13353
Pro Ala Val Ile Thr Asp Lys Val Met Pro Ala Cys Leu Pro Ser Pro	
4425 4430 4435	
gac tac atg gtc acc gcc agg act gaa tgt tac atc act ggc tgg gga	13401
Asp Tyr Met Val Thr Ala Arg Thr Glu Cys Tyr Ile Thr Gly Trp Gly	
4440 4445 4450	
gaa acc caa ggt acc ttt ggg act ggc ctt ctc aag gaa gcc cag ctc	13449
Glu Thr Gln Gly Thr Phe Gly Thr Gly Leu Leu Lys Glu Ala Gln Leu	
4455 4460 4465	
ctt gtt att gag aat gaa gtg tgc aat cac tat aag tat att tgt gct	13497
Leu Val Ile Glu Asn Glu Val Cys Asn His Tyr Lys Tyr Ile Cys Ala	
4470 4475 4480	
gag cat ttg gcc aga ggc act gac agt tgc cag ggt gac agt gga ggg	13545
Glu His Leu Ala Arg Gly Thr Asp Ser Cys Gln Gly Asp Ser Gly Gly	
4485 4490 4495 4500	
cct ctg gtt tgc ttc gag aag gac aaa tac att tta caa gga gtc act	13593
Pro Leu Val Cys Phe Glu Lys Asp Lys Tyr Ile Leu Gln Gly Val Thr	
4505 4510 4515	
tct tgg ggt ctt ggc tgt gca cgc ccc aat aag cct ggt gtc tat gct	13641
Ser Trp Gly Leu Gly Cys Ala Arg Pro Asn Lys Pro Gly Val Tyr Ala	
4520 4525 4530	

cgt gtt tca agg ttt gtt act tgg att gag gga atg atg aga aat aat 13689
 Arg Val Ser Arg Phe Val Thr Trp Ile Glu Gly Met Met Arg Asn Asn
 4535 4540 4545

taa ttggacggga gacagagtga agcatcaacc tacttagaag ctgaaacgtg 13742
 *

ggtaaggatt tagcatgctg gaaataatag acagcaatca aacgaagaca ctgttcccag 13802
 ctaccagcta tgccaaacct tggcattttt ggtatttttg tgtataagct ttaaggtct 13862
 gactgacaaa ttctgtatta aggtgtcata gctatgacat ttgttaaaaa taaactctgc 13922
 acttattttg atttga 13938

<210> 5
 <211> 25
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> PCR Primer

<400> 5
 cagctcctta ttgttatagc aggga 25

<210> 6
 <211> 18
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> PCR Primer

<400> 6
 tgcgtctgag cattgcgt 18

<210> 7
 <211> 24
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> PCR Probe

<400> 7
 cccggtgtca ggtgggagta ctgc 24

<210> 8
 <211> 19
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> PCR Primer

<400> 8
 gaaggtgaag gtcggagtc 19

<210> 9
 <211> 20
 <212> DNA
 <213> Artificial Sequence

 <220>
 <223> PCR Primer

 <400> 9
 gaagatggtg atgggatttc 20

 <210> 10
 <211> 20
 <212> DNA
 <213> Artificial Sequence

 <220>
 <223> PCR Probe

 <400> 10
 caagcttccc gttctcagcc 20

 <210> 11
 <211> 20
 <212> DNA
 <213> Artificial Sequence

 <220>
 <223> Antisense Oligonucleotide

 <400> 11
 ggcaggtcct tcctgtgaca 20

 <210> 12
 <211> 20
 <212> DNA
 <213> Artificial Sequence

 <220>
 <223> Antisense Oligonucleotide

 <400> 12
 tctgcgtctg agcattgcgt 20

 <210> 13
 <211> 20
 <212> DNA
 <213> Artificial Sequence

 <220>
 <223> Antisense Oligonucleotide

 <400> 13
 aagcttgga ggttcttctt 20

<210>	14	
<211>	20	
<212>	DNA	
<213>	Artificial Sequence	
<220>		
<223>	Antisense Oligonucleotide	
<400>	14	
	tcggaggcgc gacggcagtc	20
<210>	15	
<211>	20	
<212>	DNA	
<213>	Artificial Sequence	
<220>		
<223>	Antisense Oligonucleotide	
<400>	15	
	cggaggcgcg acggcagtcc	20
<210>	16	
<211>	20	
<212>	DNA	
<213>	Artificial Sequence	
<220>		
<223>	Antisense Oligonucleotide	
<400>	16	
	ggcaggttct tcctgtgaca	20
<210>	17	
<211>	20	
<212>	DNA	
<213>	Artificial Sequence	
<220>		
<223>	Antisense Oligonucleotide	
<400>	17	
	ataacaataa ggagctgcca	20
<210>	18	
<211>	20	
<212>	DNA	
<213>	Artificial Sequence	
<220>		
<223>	Antisense Oligonucleotide	
<400>	18	
	gaccaagctt ggcaggttct	20

<210>	19	
<211>	20	
<212>	DNA	
<213>	Artificial Sequence	
<220>		
<223>	Antisense Oligonucleotide	
<400>	19	
	taacaataag gagctgccac	20
<210>	20	
<211>	20	
<212>	DNA	
<213>	Artificial Sequence	
<220>		
<223>	Antisense Oligonucleotide	
<400>	20	
	tgaccaagct tggcaggttc	20
<210>	21	
<211>	20	
<212>	DNA	
<213>	Artificial Sequence	
<220>		
<223>	Antisense Oligonucleotide	
<400>	21	
	ttctgcgtct gagcattgcg	20
<210>	22	
<211>	20	
<212>	DNA	
<213>	Artificial Sequence	
<220>		
<223>	Antisense Oligonucleotide	
<400>	22	
	aacaataagg agctgccaca	20
<210>	23	
<211>	20	
<212>	DNA	
<213>	Artificial Sequence	
<220>		
<223>	Antisense Oligonucleotide	
<400>	23	
	acctgacacc gggatccctc	20

<210>	24	
<211>	20	
<212>	DNA	
<213>	Artificial Sequence	
<220>		
<223>	Antisense Oligonucleotide	
<400>	24	
	ctgagcattg cgtcaggttg	20
<210>	25	
<211>	20	
<212>	DNA	
<213>	Artificial Sequence	
<220>		
<223>	Antisense Oligonucleotide	
<400>	25	
	agtagttcat gatcaagcca	20
<210>	26	
<211>	20	
<212>	DNA	
<213>	Artificial Sequence	
<220>		
<223>	Antisense Oligonucleotide	
<400>	26	
	gacggcagtc ccttctgcgt	20
<210>	27	
<211>	20	
<212>	DNA	
<213>	Artificial Sequence	
<220>		
<223>	Antisense Oligonucleotide	
<400>	27	
	ggcaggttct tccagtgaca	20
<210>	28	
<211>	20	
<212>	DNA	
<213>	Artificial Sequence	
<220>		
<223>	Antisense Oligonucleotide	
<400>	28	
	tgaccaagct tggcaagttc	20

<210>	29	
<211>	20	
<212>	DNA	
<213>	Artificial Sequence	
<220>		
<223>	Antisense Oligonucleotide	
<400>	29	
	tataacacca aggactaatc	20
<210>	30	
<211>	20	
<212>	DNA	
<213>	Artificial Sequence	
<220>		
<223>	Antisense Oligonucleotide	
<400>	30	
	ccatctgaca ttgggatcca	20
<210>	31	
<211>	20	
<212>	DNA	
<213>	Artificial Sequence	
<220>		
<223>	Antisense Oligonucleotide	
<400>	31	
	tgtggtgtca tagaggacca	20
<210>	32	
<211>	20	
<212>	DNA	
<213>	Artificial Sequence	
<220>		
<223>	Antisense Oligonucleotide	
<400>	32	
	atgggatcct ccgatgccaa	20
<210>	33	
<211>	20	
<212>	DNA	
<213>	Artificial Sequence	
<220>		
<223>	Antisense Oligonucleotide	
<400>	33	
	acaccaaggg cgaatctcag	20

<210>	34	
<211>	20	
<212>	DNA	
<213>	Artificial Sequence	
<220>		
<223>	Antisense Oligonucleotide	
<400>	34	
	ttctgtcact ggacatcgtg	20
<210>	35	
<211>	20	
<212>	DNA	
<213>	Artificial Sequence	
<220>		
<223>	Antisense Oligonucleotide	
<400>	35	
	cacacggatc ggttgtgtaa	20
<210>	36	
<211>	20	
<212>	DNA	
<213>	Artificial Sequence	
<220>		
<223>	Antisense Oligonucleotide	
<400>	36	
	acatgtcctt cctgtgacag	20
<210>	37	
<211>	20	
<212>	DNA	
<213>	Artificial Sequence	
<220>		
<223>	Antisense Oligonucleotide	
<400>	37	
	cagaaggagg ccctaggctt	20
<210>	38	
<211>	20	
<212>	DNA	
<213>	Artificial Sequence	
<220>		
<223>	Antisense Oligonucleotide	
<400>	38	
	ctggcggtga ccatgtagtc	20

<210>	39	
<211>	20	
<212>	DNA	
<213>	Artificial Sequence	
<220>		
<223>	Antisense Oligonucleotide	
<400>	39	
	tctaagtagg ttgatgcttc	20
<210>	40	
<211>	20	
<212>	DNA	
<213>	Artificial Sequence	
<220>		
<223>	Antisense Oligonucleotide	
<400>	40	
	tccttaccca cgtttcagct	20
<210>	41	
<211>	20	
<212>	DNA	
<213>	Artificial Sequence	
<220>		
<223>	Antisense Oligonucleotide	
<400>	41	
	ggaacagtgt cttcgtttga	20
<210>	42	
<211>	20	
<212>	DNA	
<213>	Artificial Sequence	
<220>		
<223>	Antisense Oligonucleotide	
<400>	42	
	gtttggcata gctggtagct	20
<210>	43	
<211>	20	
<212>	DNA	
<213>	Artificial Sequence	
<220>		
<223>	Antisense Oligonucleotide	
<400>	43	
	accttaaaag cttatacaca	20

<210> 44
 <211> 20
 <212> DNA
 <213> Artificial Sequence

 <220>
 <223> Antisense Oligonucleotide

 <400> 44
 atacagaatt tgtcagtcag 20

 <210> 45
 <211> 20
 <212> DNA
 <213> Artificial Sequence

 <220>
 <223> Antisense Oligonucleotide

 <400> 45
 gtcatagcta tgacacctta 20

 <210> 46
 <211> 20
 <212> DNA
 <213> H. sapiens

 <220>

 <400> 46
 tgtcacagga aggacctgcc 20

 <210> 47
 <211> 20
 <212> DNA
 <213> H. sapiens

 <220>

 <400> 47
 acgcaatgct cagacgcaga 20

 <210> 48
 <211> 20
 <212> DNA
 <213> H. sapiens

 <220>

 <400> 48
 gactgccgtc ggcctccga 20

 <210> 49
 <211> 20

<212> DNA
 <213> H. sapiens
 <220>
 <400> 49
 tgtcacagga agaacctgcc 20
 <210> 50
 <211> 20
 <212> DNA
 <213> H. sapiens
 <220>
 <400> 50
 tggcagctcc ttattgttat 20
 <210> 51
 <211> 20
 <212> DNA
 <213> H. sapiens
 <220>
 <400> 51
 agaacctgcc aagcttggtc 20
 <210> 52
 <211> 20
 <212> DNA
 <213> H. sapiens
 <220>
 <400> 52
 gtggcagctc cttattgtta 20
 <210> 53
 <211> 20
 <212> DNA
 <213> H. sapiens
 <220>
 <400> 53
 cgcaatgctc agacgcagaa 20
 <210> 54
 <211> 20
 <212> DNA
 <213> H. sapiens
 <220>

<400> 54
gagggatccc ggtgtcaggt 20

<210> 55
<211> 20
<212> DNA
<213> H. sapiens

<220>

<400> 55
tggcttgatc atgaactact 20

<210> 56
<211> 20
<212> DNA
<213> H. sapiens

<220>

<400> 56
tggatcccaa tgtcagatgg 20

<210> 57
<211> 20
<212> DNA
<213> H. sapiens

<220>

<400> 57
tggtcctcta tgacaccaca 20

<210> 58
<211> 20
<212> DNA
<213> H. sapiens

<220>

<400> 58
ttggcatcgg aggatcccat 20

<210> 59
<211> 20
<212> DNA
<213> H. sapiens

<220>

<400> 59
ctgagattcg cccttggtgt 20

<210> 60

<211>	20	
<212>	DNA	
<213>	H. sapiens	
<220>		
<400>	60	
	cacgatgtcc agtgacagaa	20
<210>	61	
<211>	20	
<212>	DNA	
<213>	H. sapiens	
<220>		
<400>	61	
	ttacacaacc gatccgtgtg	20
<210>	62	
<211>	20	
<212>	DNA	
<213>	H. sapiens	
<220>		
<400>	62	
	ctgtcacagg aaggacatgt	20
<210>	63	
<211>	20	
<212>	DNA	
<213>	H. sapiens	
<220>		
<400>	63	
	gactacatgg tcaccgccag	20
<210>	64	
<211>	20	
<212>	DNA	
<213>	H. sapiens	
<220>		
<400>	64	
	gaagcatcaa cctacttaga	20
<210>	65	
<211>	20	
<212>	DNA	
<213>	H. sapiens	
<220>		

<400> 65
agctgaaacg tgggtaagga 20

<210> 66
<211> 20
<212> DNA
<213> H. sapiens

<220>

<400> 66
tcaaacgaag aactgttcc 20

<210> 67
<211> 20
<212> DNA
<213> H. sapiens

<220>

<400> 67
agctaccagc tatgccaaac 20

<210> 68
<211> 20
<212> DNA
<213> H. sapiens

<220>

<400> 68
tgtgtataag cttttaaggt 20

<210> 69
<211> 20
<212> DNA
<213> H. sapiens

<220>

<400> 69
taaggtgtca tagctatgac 20

<210> 70
<211> 20
<212> DNA
<213> Artificial Sequence

<220>

<223> Antisense Oligonucleotide

<400> 70
ctcttactgt gctgtggaca 20

<210> 71
<211> 20
<212> DNA
<213> Artificial Sequence

<220>
<223> PCR Primer

<400> 71
ggcaaattca acggcacagt

20

<210> 72
<211> 20
<212> DNA
<213> Artificial Sequence

<220>
<223> PCR Primer

<400> 72
gggtctcgct cctggaagat

20

<210> 73
<211> 27
<212> DNA
<213> Artificial Sequence

<220>
<223> PCR Probe

<400> 73
aaggccgaga atgggaagct tgtcatc

27

<210> 74
<211> 19
<212> RNA
<213> Artificial Sequence

<220>
<223> Oligomeric Compound

<400> 74
cgagaggcgg acgggaccg

19

<210> 75
<211> 21
<212> DNA
<213> Artificial Sequence

<220>
<223> Oligomeric Compound

<220>
<221> misc_feature
<222> (1)...(19)
<223> bases at these positions are RNA

<400> 75
cgagaggcgg acgggaccgt t

21

<210> 76
<211> 21
<212> DNA
<213> Artificial Sequence

<220>
<223> Oligomeric Compound

<220>
<221> misc_feature
<222> (3)...(21)
<223> bases at these positions are RNA

<400> 76
ttgctctccg cctgccctgg c
ISPH-0595US.P1 -1- PATENT

21

BIOL0015US.L -1- PATENT

"Express Mail" Label No.: filed LTS
Date of Deposit: _____